ARMY ENGINEER DISTRICT, SACRAMENTO SPK-05330
CORPS OF ENGINEERS Aug 88
SACRAMENTO, CALIFORNIA Revised Apr 89

TO: Architect-Engineers and District Personnel:

1. The attached revised guide specification supercedes the previous guide, COMPOSITE FLOOR TILE, SPK-5B, dated August 1988, and is for use in the preparation of project specifications.

TEXT REVISIONS
Para 1.1
Para 1.2
Para 1.4

NOTE: A-E's should read all the TECHNICAL NOTES located at the beginning of this guide specification and edit the specification accordingly.

SPK-05330
Apr 1989

GENERAL NOTES

1. This guide specification is to be used in the preparation of contract specifications in accordance with the Sacramento District Specification Manual. It will not be made a part of a contract merely by reference; pertinent portions will be copied verbatim into the contract documents.

2. Where numbers, symbols, words, phrases, clauses, or sentences in this specification are enclosed in the following manner: [ ], a choice or modification must be made; delete inapplicable portion(s) carefully. Where blank spaces occur in sentences, insert the appropriate data. Where entire paragraphs are not applicable, they should be deleted completely.

TECHNICAL NOTES

A. The section number will be inserted in the specification heading and prefixed to each page number in project specifications.

B. Paragraph 1: The listed designations for publications are those that were in effect when this guide specification was being prepared. These designations are updated when necessary by District Instruction, and references in project specifications need be no later than in the current District Instruction for this guide specification. To minimize the possibility of error, the letter suffixes, amendments, and dates indicating specific issues should be retained in Paragraph 1 and omitted elsewhere in the project specification.

C. List all required structural properties on the drawings. These shall include the minimum gage, moment of inertia and section modulus (Sp & Sn) of the steel deck. Section properties should be based on the construction loads [assuming no shoring] given in the S.D.I. manual. In some cases, the designer may specify the minimum diaphram shear capacity of the composite floor.

D. Paragraph 6.1: G60 is the minimum galvanizing for composite steel floor deck. G90 galvanizing should be specified in areas where the deck may be subject to harmful chemicals, such as salt water. In this case, the concrete surface should be sealed and the exposed bottom surface of the

deck should be protected with a durable paint.

SPK-05330
April 1989

INDEX

SECTION 05330

COMPOSITE FLOOR SYSTEM

SECTION 05330

COMPOSITE FLOOR SYSTEM

1. APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1 American Iron and Steel Institute (AISI) Publication:

Specification for the Design of Cold-Formed Steel Structural Members (Sep 3, 1980, with Errata).

1.2 American Society for Testing and Materials (ASTM) Publication:

A 185-85	Welded Steel Wire Fabric for Concrete Reinforcement
A 525-86	Steel Sheet, Zinc-Coated (Galvanized by the Hot-Dip Process)
A 615-86	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
A 616-86	Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
A 617-84	Axle-Steel Deformed and Plain Bars for Concrete Reinforcement

1.3 American Welding Society (AWS) Publication:

D1.3-81 Structural Welding Code-Sheet Steel

1.4 Steel Deck Institute (SDI) Publication:

Steel Deck Institute Design Manual for Composite Decks, Form Decks and Roof Decks, 1984.

2. SCOPE: Composite steel floor deck is cold-formed steel deck which acts as a permanent form and as the positive bending reinforcement for the structural concrete. After the concrete hardens the steel deck and the concrete are interlocked by the shape of the deck, mechanical means, surface bond or by a combination of these means. The unit formed by this interlocking

action is referred to, in this specification, as a composite floor.

3. GENERAL REQUIRMENTS: Composite floor cross section, thickness, section properties and diaphragm shear capacity shall be as indicated on the drawings. Section properties of the deck shall be determined in accordance with the AISI Specification for the Design of Cold-Formed Steel Structural

Members. Steel deck having a cross section which differs from the units indicated may be used provided that the properties of the proposed units are not less than the properties of the units indicated. Where practical, steel deck units shall span three or more supports. Any loads to be suspended from the steel deck or composite floor shall be as indicated on the drawings or as approved by the Contracting Officer.

4. SUBMITTALS:

4.1 Shop Drawings: Shop drawings shall be submitted for approval in accordance with the SPECIAL CLAUSES. Drawings shall include type, configuration, structural properties, layout and necessary details of the steel deck units; accessories and their support members; size and location of the holes to be cut and reinforcement to be provided; location and sequence of welded [of fastener] connections and the manufacturers erection instructions. Shop drawings shall also show details of concrete reinforcement including sizes, grades and splicing, and any shoring required.

4.2 Design Computations: Design computations for the section properties of the steel deck shall be submitted with the shop drawingss. Performance properties and capacities of the composite floor, in the form of an ICBO research report or test reports performed or witnesses by a registered engineer, shall be submitted with the shop drawings. Testing shall comply with section 5.2 of SDI specifications and commentaries for composite steel floor deck.

5. DELIVERY, STORAGE AND HANDLING: Steel deck shall be delivered, stored, handled and installed in a manner to protect it from corrosion, permanent deformation and other types of damage. The units shall be stored in a dry location, not in contact with the ground. The galvanized coating of steel deck units shall be maintained at all times with touch-up paint. The maximum storage load shall not exceed the allowable live load. Steel deck units shall not be used as a storage or working platform until they have been attached in final position. All damaged material shall be replaced at no additional expense to the Government.

6. MATERIALS:

6.1 Composite Steel Floor Deck: Steel deck units shall be fabricated from steel conforming to section 1.2 of the AISI Specification for the design of Cold-Formed Steel Structural Members. The steel used shall have a minimum yield stress of 33 k.s.i. The delivered thickness excluding the zinc coating shall not be less than 95% of the design thickness. Steel deck units shall be zinc coated in accordance with ASTM A 525, designation [G60] [G90].

6.2 Touch-up Paint: Touch-up paint shall be an approved galvanizing repair paint with a high zinc dust content.

6.3 Accessories: The manufacturer's standard type accessoreis shall be furnished as necessary to complete the steel deck installation. Metal

accessories shall be of the same material and finish as the steel deck. Adjusting plates or segments of steel deck units shall be provided in locations too narrow to accommodate full size units. As far as practical, the plates shall be the same gage and configuration as the steel deck units.

6.4 Concrete: Concrete work for composite floors shall be as specified in SECTION: CONCRETE FOR BUILDING CONSTRUCTION. Minimum compressive strength shall be 3000 p.s.i. with density and aggregate as specified in SECTION: CONCRETE FOR BUILDING CONSTRUCTION. Concrete with admixtures containing chloride salts or other deleterious materials shall not be used.

6.5 Concrete Reinforcement:

6.5.1 Wire mesh shall conform to ASTM A 185.

6.5.2 Deformed bars shall conform to ASTM A 615, grade [40] [60]; A 616, grade [50] [60]; or ASTM A 617 [40] [60].

6.6 Electrified Floors: Components for electified floors shall be provided by the manufacturer of the steel floor deck. The raceway system shall be designed and installed so as not to reduce the load carrying capacity of the composite floor system.

7. ERECTION: Erection of the steel deck and accessoreis shall be in accordance with the approved shop drawings. Damaged steel deck and accessories and units with burn holes shall not be installed. The steel deck units shall be placed on secure supports, properly adjusted and aligned at right angles to supports before being permantly secured in place. Minimum bearing of the deck shall be 1 1/2 inches unless noted otherwise. Construction live loads [excluding wet concrete] on the composite deck prior to the setting of the concrete shall not exceed 20 p.s.f. uniform or 200 pounds concentrated. If heavier construction loads are anticipated, the contractor shall provide shoring subject to the approval of the Contracting Offier. Shoring shall remain in place until the concrete attains 75% of its ultimate design strength.

8. ATTACHMENTS:

8.1 Welding: All welding shall be performed in accordance with AWS D1.3 using the methods and electrodes as recommended by the manufacturer of the steel deck. Welds shall be cleaned immediately by chipping or wire brushing. Welds, cut edges and damaged portions of zinc coatings shall be heavily coated with touch-up paint. Units shall be clamped or weighted with sand bags to create firm contact between units and supports while welding is being performed.

8.1.1 Welder Qualifications: Welds shall be made only be welders who have previously qualified by test prescribed in AWS D1.3 to perform the type of work required. In addition, any welder shall be required to retest if he has not been engaged in the given process for a period exceeding six months or if required by the Contracting Officer.

8.2 Mechanical Fasteners: Documentation in the form of test data, design calculations or design charts shall be submitted with the shop drawings as the basis for obtaining approval.

9. CONCRETE PLACEMENT: Concrete placement, curing and finishing shall be in accordance with SECTION: CONCRETE FOR BUILDING CONSTRUCTION and approved shop drawings. When placing concrete, care shall be taken to avoid high pile-ups of concrete and to avoid impacts caused by dropping or dumping. If buggies are used to place the concrete, runaways shall be planked. Damage caused by careless placement shall be repaired at the Contractor's expense.

10. CONSTRUCTION QUALITY CONTROL: Attention is directed to SECTION: CONSTRUCTION QUALITY CONTROL which requires the Contractor to perform quality control inspection, testing, and reporting.

* * * * *

- REMINDER -

Located at the front of these specifications are the Contract Clauses, Special Clauses and Division I GENERAL REQUIREMENTS of the Technical Specifications, which apply to every aspect of this contract including the work in this section whether performed by Prime Contractor, subcontractor, or supplier.